

Student Profile

Feedback and Guidance Essential to Success: Lindsey McKenty

Meet Lindsey McKenty, fourth year student in the Agroecology program, Faculty of Agricultural and Food Sciences, University of Manitoba. She is a part-time reservist in the Royal Canadian Navy, and took the winter 2017 semester off to go sailing with the navy out in Victoria. McKenty's thesis research, entitled *Testing Soil Pre-treatment Handling Techniques for Total Phosphorus in Wetland Soils*, was supervised by Dr. David Lobb, U of M Soil Science professor. She gave her final thesis presentation on March 23, 2018.

Researchers have to preserve soil samples collected from outdoors in their most natural state, and in a state that allows for accurate measure of nutrients, until laboratory analyses and treatments can be performed. They do this using various pre-treatment handling techniques including air-drying, oven-drying, freeze-thawing, or freeze-drying the soils. The choice of pre-treatment handling technique depends on the type of soil and the type of nutrient being studied. Little is currently known about the best soil-drying technique when quantifying phosphorus in wetland soils.

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In her work, McKenty aimed to find which of three different drying techniques — air-drying, freeze-thawing, or freeze-drying — resulted in the most accurate measure of total phosphorus content in various soil types sampled from wetland (soils flooded with water), riparian (soils near water bodies), and field (dry soils, away from water bodies) sites. She also wanted to see whether the accuracy of the three soil drying techniques would vary depending on soil type.

Following chemical analyses, it was found that the air-drying technique gave the most accurate measure of total

phosphorus in soils from wetland sites. The choice of pre-treatment technique did not affect the phosphorus measure in soils from the field and riparian sites.

The results of McKenty's research potentially lend a more universal implication for future research that characterize wetlands based on phosphorus content. It contributes to what is currently a sparse body of knowledge about the best pre-treatment handling technique for wetland soils by showing that air-drying before measuring total phosphorus resulted in the most accurate measure.

The greatest challenge McKenty faced during her undergraduate thesis was narrowing down her topic to one that was feasible for an undergraduate level project. Taking into consideration her scientific interests, and the time and resources available, she was able to design a manageable project for the focus of her thesis work.

One of the most significant advantages of the experience, McKenty recounted, was being able to broaden her professional network. "Doing undergrad research opened a lot of doors to many great opportunities and people I wouldn't have interacted with or met otherwise, and for that I am super grateful. As well, I now have experience with research and it has really prepped me for doing a master's program, if I decide to do one."

To students currently doing or considering undergraduate research, McKenty advises seeking feedback and guidance from professors and advisors as often as possible. "They have been down the research road many times and know the ropes." McKenty also stressed the importance of patience and staying organized, adding, "Organization is key."

McKenty takes special pride in the outcome of her research project. "My research project is my baby, I'm proud of it and it's unique to me," she expressed.

However, in her drive to always improve, she admits that she would do a few things differently if she could relive the experience, "I would definitely sample more wetlands and try to diversify the project more by testing different [chemical analyses] for their accuracy in [determining] total phosphorus."

— David Zirangey

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